Key Curriculum Press
Discovering Algebra, Algebra II

Degree of Evidence regarding the Standards for Mathematical Practice:

Moderate Evidence

Summary of evidence:

1. **Make sense of problems and persevere in solving them**. In the chapters reviewed, there are numerous opportunities for students to analyze the mathematics and to explain their findings, mainly within the lesson activities and investigations. There are several opportunities to explain answers in the problems (e.g. p. 255 #5d, p. 256 #7e, p. 257 #11f). Many open-ended questions are presented both as investigations and as practice problems (e.g. p. 294 Investigation, p. 263 #7 and #9 Mini-Investigations). Exposure to a variety of representations is present, including models, equations, tables, etc. Based on the Investigations completed in cooperative learning groups, there are frequent opportunities for self and peer revision (e.g. p. 294-295 Properties of Logarithms Investigation). Overall there are frequent open-ended problem-solving opportunities for students as they discover the concepts for themselves. There is frequent opportunity for students to create a problem-solving plan and to carry it out, checking their results for accuracy.
2. **Reason abstractly and quantitatively**. Application problems are presented throughout the text, in addition to options for projects and investigations. Students are frequently asked to create and work with a model for the problem situation, primarily using data with the graphing calculator to notice patterns. In the chapters reviewed, students are frequently, if not always, led to derive the formulas and properties through investigations and then to represent their findings using symbolic notation. Units are used throughout the text in all problems. Students work with both exact values and decimal approximations. Questions are geared towards students discovering the algorithm for the mathematics or the formula on their own or in groups, rather than just being presented with the formula from the start.
3. **Construct viable arguments and critique the reasoning of others**. The opportunities for students to explain their reasoning are in the investigations of each section as well as in many of the practice problems; students are asked to describe, explain, or justify their solutions. In the teacher resource, the "Facilitating Student Work" and "Assessing Progress" sections provide the teacher suggestions for facilitating class discourse. There are not explicit instructions for students to share their methods and results from the investigations in the student resource, but the teacher could implement an additional step for students to justify their findings to another group. Discussions of justification are limited in the chapters reviewed, but the opportunities for students to justify their thinking are available throughout the text. Overall, this text provides ways to incorporate the critiquing of the reasoning of others, but it will rely some on teacher facilitation of the investigations. The steps for each investigation do not explicitly direct the students to share their findings with others; the teacher would need to incorporate this step to encourage students to communicate their justifications.
4. **Model with Mathematics**. In the chapters reviewed, students are frequently asked to work with mathematical models to make sense of the mathematical concepts being presented. Projects included throughout the text also encourage students to create models as well as to make connections between prior knowledge and new knowledge (e.g. p. 402, p. 433, p. 543). In the application questions, answers are in context. As students progress in their understanding of the concept covered in the lesson, they continue to build the connection among tables, equations, and situations. Overall, there are frequent opportunities for students to create and work with models while grappling with the concepts they are asked to discover on their own. Students move from

the models to the symbolic representations or formulas they have conjectured and tested on their own.

5. **Use appropriate tools strategically.** Students are asked to use graphing calculators, tables, and graphs throughout the text to complete problems. Students also use hands-on materials to complete investigations in order to model problem scenarios (e.g. p. 458, pp. 490-491, p. 520). In the chapters reviewed, there is no evidence of discussing the strengths and weaknesses of using particular tools for various problem scenarios. There is frequent mention of technology use, specifically graphing calculators. In the chapters reviewed, however, no evidence was found regarding the evaluation of the strengths and weaknesses of certain tools with respect to the problem scenario.
6. **Attend to precision.** Examples use proper notation and are precise. Students are asked to use proper notation in the practice problems (e.g. p. 631 #16), and they are asked to round to various decimal places. In the chapters reviewed, the importance of precise communication is mainly presented in the teacher resource. There are few problems where students are asked to conduct error analysis to correct misconceptions presented in a particular solution or statement. Students are given opportunities to share their solutions and compare their findings within their cooperative learning groups, dependent on teacher implementation. Overall, there does not seem to be examples of precise communication, so it would be primarily up to the teacher to incorporate this skill.
7. **Look for and make use of structure**. In the chapters reviewed, there are frequent opportunities for students to examine examples and then generalize the mathematics. Students frequently discover the mathematical rule for themselves through the investigations. The rule or formula is then completed by the students. Most activities have students explore patterns to create generalizations. Students are continually asked to activate their prior knowledge to tackle new problems or conjectures, and there are numerous opportunities for students to generalize their findings. In the chapters reviewed, students are frequently given the opportunity to discover the mathematical rule on their own through the provided investigations.
8. **Look for and express regularity in repeated reasoning.** In the chapters reviewed, there are frequent examples where the resource asks students to look at patterns in order to arrive at a generalization. Questions in the investigations lead students to develop formulas for themselves. There are frequent opportunities for students to generalize a pattern to determine a rule. The bulk of the text is organized so students discover the mathematical truths on their own through investigations, but it would depend on teacher implementation of those investigations.